I CLAIM:

1. A HA-binding peptide comprising:

(a) a sequence of the formula I:

$$X_1 - X_2 - X_1 - X_3 - X_4 - X_3 - X_4 - X_3 - X_3 - X_3 - X_5 - X_6 - X_6 - X_6 - X_1$$
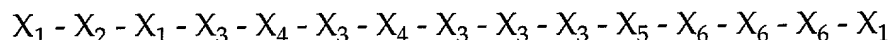
5   wherein

each X_1 is independently selected from a hydroxy amino acid residue;

each X_2 is independently selected from a sulfur containing amino acid residue;

each X_3 is independently selected from a basic amino acid residue;

10   each X_4 is independently selected from an imino or aromatic amino acid residue;

each X_5 is independently selected from a dicarboxylic acid amino acid residue; and

each X_6 is independently selected from an aliphatic amino acid residue,

15   and fragments, analogs or derivatives of the peptide which can bind HA;

(b) a sequence of the formula II:

$$Y_1 - Y_1 - Y_2 - Y_2 - Y_1 - Y_3 - Y_1 - Y_3 - Y_3 - Y_1 - Y_3 - Y_1 - Y_2 - Y_3 - Y_3$$

wherein

each Y_1 is independently selected from a hydroxy amino acid residue;

20   each Y_2 is independently selected from a sulfur containing amino acid residue; and

each Y_3 is independently selected from a basic amino acid residue,

and fragments, analogs or derivatives of the peptide which bind HA; or

(c) a sequence of the formula III:

25     $$Z_1 - Z_1 - Z_2 - Z_2 - Z_1 - Z_3 - Z_1 - Z_3 - Z_3 - Z_1 - Z_3 - Z_1 - Z_3 - Z_3$$

wherein

each Z_1 is independently selected from a hydroxy amino acid residue;

each Z_2 is independently selected from a sulfur containing amino acid residue; and

30   each Z_3 is independently selected from a basic amino acid residue, and

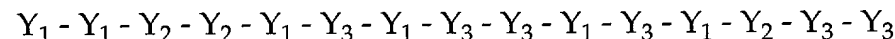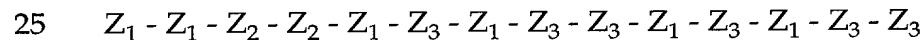fragments, analogs or derivatives of the peptide which bind HA.

2.   A HA-binding peptide comprising a sequence of the formula I as defined in claim 1 wherein

each X_1 is independently selected from threonine or serine;

each X_2 is independently selected from methionine or cysteine;

5   each X_3 is independently selected from arginine, lysine or histidine;

each X_4 is independently selected from proline, phenylalanine or tryptophan;

each X_5 is independently selected from asparagine or glutamine; and

each X_6 is independently selected from leucine, isoleucine, valine or alanine,

10   and fragments, analogs or derivatives of the peptide which can bind HA.

3.   A peptide according to claim 2 comprising the amino acid sequence TMTRPHFHKRQLVLS.

4.   A peptide according to claim 3 wherein the amino acids in the peptide are the levorotatory (L) form.

15   5.   A HA-binding peptide comprising a sequence of the Formula II as defined in claim 1, wherein

each Y_1 is independently selected from serine or threonine;

each Y_2 is independently selected from methionine or cysteine; and

each Y_3 is independently selected from arginine, lysine or histidine,

20   and fragments, analogs or derivatives of the peptide which bind HA.

6.   A peptide according to claim 5 comprising the amino acid sequence STMMSRSHKTRSCHH.

7.   A peptide according to claim 6 wherein the amino acids in the peptide are the levorotatory (L) form.

25   8.   A HA-binding peptide comprising a sequence of the formula III as defined in claim 1, wherein

each Z_1 is independently selected from serine or threonine;

each Z_2 is independently selected from methionine or cysteine; and

each Z_3 is independently selected from arginine, lysine or histidine,

and fragments, analogs or derivatives of the peptide which bind HA.

5   9.   A peptide according to claim 8 comprising the amino acid sequence STMMSRSHKTRSHH.

10.   A peptide according to claim 9 wherein the amino acids in the peptide are the levorotatory (L) form.

11.   A peptide according to claim 8 comprising the amino acid
10   sequence STMMSRSHKTRSHHV.

12.   A peptide according to claim 11 wherein the amino acids in the peptide are the levorotatory (L) form.

13.   An isolated nucleic acid molecule encoding a HA binding peptide according to claim 1.

15   14.   An isolated nucleic acid molecule according to claim 13 encoding a HA binding peptide and comprising a nucleotide sequence selected from the group consisting of:

(a)   the nucleotide sequence shown in SEQ ID NO. 5;

(b)   the nucleotide sequence shown in SEQ ID NO. 6;

20   (c)   the nucleotide sequence shown in SEQ ID NO. 7;

(d)   the nucleotide sequence shown in SEQ ID NO. 8;

(e)   the nucleotide sequence shown in SEQ ID NO. 9;

(f)   the nucleotide sequence shown in SEQ ID NO. 10;

(g)   the nucleotide sequence shown in SEQ ID NO. 11; and

25   (h)   the nucleotide sequence shown in SEQ ID NO. 12.

15.   An expression vector comprising an isolated nucleic acid molecule according to claim 13 and regulatory sequences suitable for expression of the nucleic acid molecule.

16.   A method of modulating cell locomotion comprising administering an effective amount of one or more hyaluronan-binding peptides according to claim 1 to a cell or animal in need thereof.

17.   A method of modulating cell locomotion comprising administering an effective amount of hyaluronan-binding peptide according to claim 3 to a cell or animal in need thereof.

18.   A method of modulating cell locomotion comprising administering an effective amount of hyaluronan-binding peptide according to claim 6 to a cell or animal in need thereof.

19.   A method of modulating cell locomotion comprising administering an effective amount of hyaluronan-binding peptide according to claim 9 to a cell or animal in need thereof.

20.   A method of modulating cell locomotion comprising administering an effective amount of hyaluronan-binding peptide according to claim 11 to a cell or animal in need thereof.

21.   A method of preventing or inhibiting tissue fibrosis comprising administering an effective amount of one or more hyaluronan-binding peptides according to claim 1 to an animal in need thereof.

22.   A method of preventing or inhibiting tissue fibrosis comprising administering an effective amount of hyaluronan-binding peptide according to claim 3 to an animal in need thereof.

23.   A method of preventing or inhibiting tissue fibrosis comprising administering an effective amount of hyaluronan-binding peptide according to claim 6 to an animal in need thereof.

24.   A method of preventing or inhibiting tissue fibrosis comprising administering an effective amount of hyaluronan-binding peptide according to claim 9 to an animal in need thereof.

25.   A method of preventing or inhibiting tissue fibrosis comprising administering an effective amount of hyaluronan-binding peptide according to claim 11 to an animal in need thereof.

26.   A method according to claim 21 wherein the tissue fibrosis is caused by a disorder selected from the group consisting of tissue malfunction due to keloids, hypertrophic scars, anatomonic strictures, intra-abdominal adhesions, cirrhosis of the liver, neurological deficits following spinal cord injury, valvular heart diseases, burn-injured joints, failure of anastomosis and adhesions following surgery.

27.   A method of treating or preventing cancer comprising administering an effective amount of one or more hyaluronan-binding peptides according to claim 1 to an animal in need thereof.

28.   A method of preventing or reducing the metastasis of cancer cells comprising administering an effective amount of one or more hyaluronan-binding peptides according to claim 1 to an animal in need thereof.